Claims 1-37 are pending in the application and have been rejected by the Examiner.

In the Office Action, the Examiner rejected claim 21 under 35 U.S.C. §112, ¶2 as being indefinite. Applicants have amended claim 21 to better recite the relationship of current determination. Applicants respectfully request that the Examiner reconsider and withdraw the §112 rejection of claim 21.

The Examiner rejected claims 8, 12, 13, 16-19, 22-34, 36 and 37 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,729,119 ("Barbour"). Applicants respectfully traverse such rejection. It is respectfully submitted that claims 8, 12, 13, 16-19, 22-34, 36 and 37 are allowable over the cited reference for the reasons set forth below.

Claims 8, 12, 13, 16-19, 22-34, 36 and 37 include features that are neither disclosed nor suggested by the art of record.

The present invention provides a power switching control device and methods for using the same to control a magnetic actuator (connected to a power line) within a power switching device. The present invention uses a magnetic actuator connected to a power line as a direct, controlled main interrupter or power switch to a large electrical system. In this manner, the power switching control device is adapted to provide a series of modulated current pulses to control a <u>magnetic actuator</u> (performing the functions of a main interrupter) within a power switching device.

In contrast, the Barbour reference is directed to an under voltage trip device. Specifically, Barbour teaches a device that controls a low power, <u>non-magnetic solenoid</u> when an under voltage condition occurs. As mentioned in the "Background of the Invention"

section of the Barbour reference, the invention is designed for use in a electrical distribution system within a factory or the like to manipulate the power circuits therein.

The device recited in the claims of the present application is distinguishable from that taught in Barbour. First, the device recited in the claims includes a magnetic actuator connected to a power line- which acts as a main interrupter --for a high voltage electrical supply system. The Barbour reference fails to disclose this feature. In this manner, the device taught in Barbour is inoperable as a main interrupter because solenoids have insufficient electrical and physical characteristics to act as a main interrupter. For instance, unlike solenoids, magnetic actuators operate from a significantly greater pulse and require signals with opposite polarities to switch and re-switch.

Since independent claims 8, 17, 24, 28, and 34 recite a power switching device having a <u>magnetic actuator connected to a power line in a high voltage electrical distribution system</u> and methods for controlling the same and the Barbour reference does not teach such a feature,. Barbour cannot anticipate claims 8, 17, and 24. Consequently, Applicants respectfully request reconsideration and withdrawal of the §102(b) rejection of independent claims 8, 17, 24, 28, and 34 and all claim depending therefrom including claims 12, 13, 16, 18-19, 22-23, 25-33, 36 and 37.

The Examiner also rejected claims 1-7, 9-11, 14, 15, 20, 21 and 35 under 35 U.S.C. §103(a) over Barbour in view of U.S. Patent No. 6,147,422 ("Delson"). Such rejection is respectfully traversed. It is respectfully submitted that claims 1-7, 9-11, 14, 15, 20, 21 and 35 are allowable over the cited references for the reasons set forth below.

The combination of the cited references does not teach all the features of claim 1. Claim 1 recites, among other things, "applying a series of modulated current pulses through

the coil of the magnetic actuator connected to the power line in the high voltage electrical distribution system". (Emphasis added) The combination of Barbour and Delson does not teach or suggest this feature.

As discussed above, Barbour fails to teach a magnetic actuator connected to a power line. It is respectfully submitted that the Delson reference does not cure the deficiency of the Barbour reference. The Delson reference only teaches a magnetic actuator. Consequently, even if one of ordinary skill the art were to combine the Delson and Barbour references, the resulting device would not teach all the features of claim 1 and would be inoperable. Namely, the combination fails to teach a magnetic actuator connected to power line (acting as a main interrupter to a high voltage electrical system).

In fact, to combine Delson and Barbour would change the principle of operation of the Barbour reference which is insufficient to establish a §103(a) rejection . As mentioned above, Barbour only teaches an undervoltage trip device including a solenoid and Delson only teaches a magnetic actuator. Consequently, the resulting combination would only yield an undervoltage trip device that includes a magnetic actuator. In contrast, the operation of the present invention, as recited in claim 1, is a power switching device that includes a magnetic actuator connected to power line for operation as a main line interrupter.

Since the combination of the references fails to show all the features of claim 1, such claim and all claims dependent therefrom, including claims 2-7 are patentable at least by their dependency. Applicant respectfully submits that independent claims 8, 17, 24, 28, and 34 have been shown to contain patentable subject matter. Consequently, all claims depending therefrom, including claims 9-11, 14, 15, 20, 21 and 35 are also patentable, at least by their

dependency. Applicant respectfully requests reconsideration and withdrawal of the §103(a) rejection of claim 1-7, 9-11, 14, 15, 20, 21 and 35.

Accordingly, and for all of the aforementioned reasons, Applicants respectfully submit that the present application, including claims 1-37, is in condition for allowance and such action is respectfully requested. Applicants attach a page entitled "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

Date: 11/18/02

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Please amend the claims as follows:

1. (Once Amended) A method for controlling a magnetic actuator having a coil and an armature within a power switching device, the actuator being connected to a power line in a high voltage electrical distribution system [device including a magnetic actuator having a coil and an armature], the method comprising:

inputting a power signal; and

applying a series of modulated current pulses through the coil of the magnetic actuator connected to the power line in the high voltage electrical distribution system in a first direction such that the actuator moves from a first position to a second position.

8. (Once Amended) A power switching control device for controlling a magnetic actuator within a power switching device connected to a power line in a high voltage electrical distribution system, the control device comprising:

a power supply;

a microprocessor;

at least one actuator drive circuit connected to a power switching device and adapted to provide a series of modulated current pulses to the magnetic actuator connected to the power line in the high voltage electrical distribution system within the power switching device.

17. (Once Amended) A method for determining a characteristic of a power switching device including a magnetic actuator having a coil and an armature, the actuator connected to a power line in a high voltage electrical distribution system, the method comprising:

applying a series of modulated current pulse through the coil for a predetermined interval of time;

measuring a current value in the coil during a portion of the predetermined interval of time;

determining an impedance value for the coil based on the current value;

comparing the impedance value for the coil to a threshold impedance value for the coil; and

determining, based on the comparison, the characteristic of the magnetic actuator connected to the power line in the high voltage electrical distribution system.

21. (Once Amended) The method of claim 17 wherein measuring the current value in the coil comprises measuring the current value at about 200 microseconds after the commencement of the predetermined interval of time.

24. (Once Amended) A power switching device system comprising:

a power switching device having a magnetic actuator connected to a power line in a high voltage electrical distribution system including a coil and an armature; and

a power switching device controller adapted to apply a voltage across the coil for a predetermined interval of time, measure a current value in the coil during a portion of the predetermined interval of time, determine an impedance value for the coil based on the

current value, compare the impedance value for the coil to a threshold impedance value for the coil and determine, based on the comparison, a characteristic of the magnetic actuator.

28. (Once Amended) A regulator for regulating voltage within a power switching device control device <u>including a magnetic actuator connected to a power line in a high voltage electrical distribution system</u>, the regulator operable in a switching mode and a linear mode, the regulator comprising:

an input power supply;

a transistor having a first, a second, and a third terminal;

an inductor disposed between the input power supply and the transistor, one end of the inductor in electrical connection with the first terminal of the transistor;

a capacitor disposed in a parallel connection with the transistor, one end of the capacitor being in electrical connection with the one end of the inductor and the other end of the capacitor being in electrical connection with an output terminal; and

the output terminal in electrical connection the third terminal of the transistor.

34. (Once Amended) A method for regulating an input power signal using a regulator operable in a switching mode and a linear mode for outputting a regulated output power signal in a power switching device control device <u>including a magnetic actuator connected to a power line in a high voltage electrical distribution system</u>, the method comprising:

receiving an input power signal having a first voltage;

regulating the input power signal to a second voltage;

outputting a regulated output signal at the second voltage;

determining, based on the regulated output signal, whether to operate the regulator in switching mode or a linear mode.